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ABSTRACT

This document contains collected materials and guidelines developed by the Yale Public Schools in Yale, Michigan, in an effort to standardize the process of writing and reviewing curricula. The document is based on the notions that the written curriculum should also be the taught curriculum, that the taught curriculum should also be the tested curriculum, and that teachers should teach to the test. A brief introduction and statement of philosophy are followed by sections concerning: (1) principles of curriculum articulation; (2) the scope and sequence of concepts; (3) course descriptions; (4) procedures for the approval of course descriptions; (5) contents of unit plans; (6) details of the curriculum review process; (7) criteria for analyzing curricula; and (8) the composition, aims, resources, and procedures of subject area committees. Appendices provide lists of resources, teaching techniques, evaluation procedures, process skills related to learning, and action verbs. Sample forms related to several sections of the document are provided. (RH)

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CURRICULUM PROCESS

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YALE PUBLIC SCHOOLS

by the Curriculum Process Committee: Stephen A. Anderson, Richard Dams, Ralph Darin, Debra Gilmore, James Heimbuch.

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Curriculum Process Handbook

Introduction

The Curriculum Process Committee was formed to meet a need expressed by the Curriculum Committee: the need to coordinate and standardize the articulation of curriculum. As the Curriculum Process Committee began to develop a curriculum process, additional concerns arose. The first was the need to develop a curriculum that would result in higher productivity in terms of student outcomes. Based upon a reading of effective schools research, the committee chose an outcomes-based model. The second, was the belief that various curriculum strands should be integrated rather than developed into separate or parallel programs. Examples of curriculum strands to be integrated included higher order thinking skills, career education, study skills, and technological application. The result was a two-dimensional scope and sequence similar to a model introduced by the National Council of Teachers of Mathematics. The third concern was past experience of committee members who participated in writing curriculum which resulted in a document that collected dust. Therefore, the committee felt that a curriculum should be designed that was usable and auditable.

Introduction

The purpose of this document is to standardize the process of writing and reviewing curriculum. It is hoped that as this process continues it will meet the following needs:

- The Board of Education's priority goal to have all schools accredited.
- To articulate all curriculum in Yale Public Schools.
- By standardizing the process, it is hoped that it will provide a common means to coordinate curriculum between grades and buildings.
- It will provide a basis for analysis to align curriculum to teaching and testing.
- It will provide a basis for analysis for school improvement.
- It will communicate essential learning outcomes which will clarify expectations.

Philosophy and Research

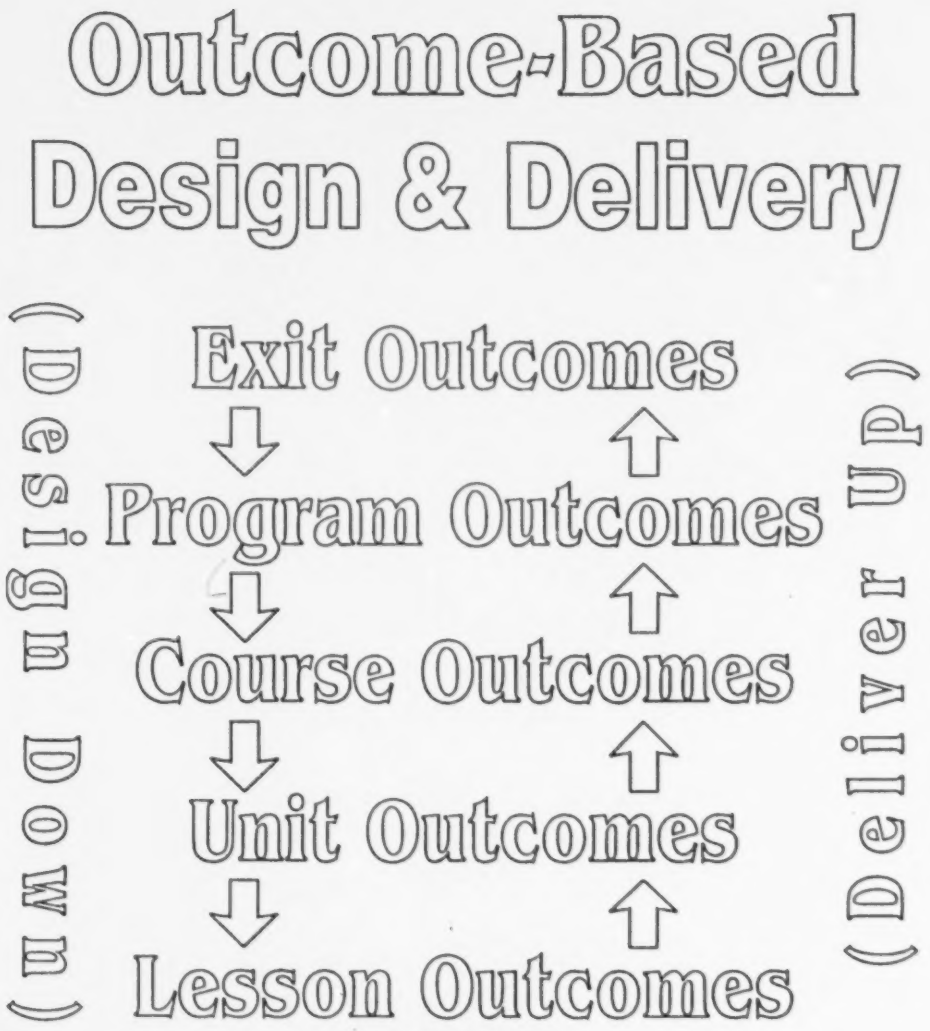
Besides articulation and coordination of curriculum, this document is based upon a philosophy that all students can learn given the necessary time. Research tends to show that when curriculum is aligned to teaching and testing, significant achievement gains are possible (Robinson, 1986; Mitchell and Spady, 1978; Rubin and Spady, 1984; Cohen, 1987; Cohen, 1983; Guskey, 1986; Bloom 1984; Spady, 1987). There are two other ways of saying this. First, the written curriculum should be the taught curriculum which should be the tested curriculum. Second, teach to the test. It is assumed that school effectiveness is student outcomes. One of the basic principles in designing an aligned and student outcomes focused curriculum is to "design down" and "deliver up". This is shown graphically in Figure 1. This document provides the process for designing down. It is assumed that evaluation plans will assess the "deliver up".

Principles for Curriculum Articulation

The Curriculum Process committee recommends that as curriculum is written the following principles should be kept in mind. These may also be considered as qualitative standards for curriculum. (Policy #IA)

1. Curriculum should be written to meet and correlate with the goals, mission statement, and policies adopted by the Board of Education.

FIGURE 1



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2. The written curriculum should correlate with the taught curriculum and the tested curriculum. It should be the common understanding of all faculty members that what is finally proposed for curriculum adoption will be taught and supervised. Consideration should be given to time allocations and professional experience in determining confidence that a large majority of students (80%+) will be able to receive, comprehend, and master concepts and objectives. While curriculum may not have to meet all standards of behavioral objectives, there should be a clear understanding as to how it can be evaluated. A correlational study should be done between written curriculum and the Board of Education adopted testing program. While the curriculum does not have to be written to test, there should be an understanding of which areas correlate and which do not in order to accurately interpret test scores.

3. Consideration should be given to cognitive skills. Other terms for cognitive skills are higher order thinking skills, metacognition, and study skills. Besides the facts of the discipline, the structure and processes in the discipline to derive theories and the analysis, synthesis and evaluation of information should be directly taught. An example is the teaching of taxonomies and scientific method in the natural sciences.

4. Curriculum should be written so that it is useful to colleagues, administration, and students. It should clarify expectations for all concerned. It also provides criteria for the evaluation and selection of instructional materials.

5. The written curriculum should show a logical progression so as to coordinate the efforts of all grade levels.

6. The written curriculum should show the application of technology and relationships to careers.

7. Consideration should be given to accreditation and standards of quality from the Michigan Department of Education and professional organizations.

8. Instructional and curricular decisions should be based on the best available educational research. (Policy #IC)

<u>Scope and Sequence</u>

In order to promote transfer and retention of learning, it is necessary to develop a logical sequence of concepts. However, if instruction is to go beyond the memorization and regurgitation of facts and if students are to keep up with the explosion of knowledge, process skills need to be taught so that application of knowledge and problem solving can occur in different contexts. Popular terms such as "thinking skills", "metacognition", higher-

order thinking skills", "study skills" and "problem solving skills" have all been used to express the same need. The following form and directions will give teachers an opportunity to analyze and articulate content into a two-dimensional model: content and process. Lists of higher order thinking skills and processes are contained in the Appendix. Recently, committees in the areas of reading, language arts and math have all discussed the importance of such processes as metacognition, writing process, and mental math and how they apply across the content. This, then, will serve as a MODEL for unit plans.

Content	In sequential order list the essential concepts or unit topics that will be tested or are essential student outcomes.
Process	Each department or subject committee should determine which process skills they wish to emphasize in their department or subject area to meet the outcome goals of the Board of Education for students graduating from Yale Public Schools. These process skills should then be listed in columns A-D. Additional columns may be added. It is understood that some content may not address all of the process skills.
Intersection of rows and columns - "Boxes".	From the model established by content rows and process columns, number the "boxes" that will be addressed by the content. Leave blank those process skills not addressed by the content or unit topics. These numbers will be used for the "process" column in the unit plans.

Course Descriptions

The following course description form has been developed to provide a standard system for describing courses offered by the Yale Public Schools. As a course description it should be a succinct outline of necessary information and the scope and sequence of the course. It should clarify for teachers, students, and administrators expectations, teaching activities, and coordination with other courses.

A. Course Title	The title of the course is to be a descriptive title that is indicative of the contents of the course. (All titles are to be approved by the building principal.) Care must be taken that a title is not changed so that a different certification is required by the teacher.

SCOPE AND SEQUENCE

Subject or Class _____

Content	Process A.	B.	C.	D.	E. Applications Technology	F. Employability Skills Career Exploration

B.	Recommend grade level	This is the recommended grade level a student should take the course so that it fits with building schedules.
C.	Course Department	The department in which this course is found and for which credit is awarded.
D.	Course Length	The number of semesters required to complete the course.
E.	Prerequisites	Recommended courses or skills needed for a student to be successful in this course.
F.	Next Recommended Course in Sequence	The next course recommended to continue study in this subject or department.
G.	Brief Description	The description is to be a brief paragraph of a few succinct sentences that describe the scope and nature of the course. The description should inform the reader what the nature of the course is and should imply what will be learned.
H.	Primary Goals	The primary goal should be the two or three goals which the course clearly and directly addresses. These goals will directly affect the content, limits, strategies, methods and techniques of the course on a day-to-day basis. It is the focus that all activities are directed towards. These goals should be aligned with student activities, evaluation, and the Board of Education's mission statement and goals.
I.	Instructional Materials	Instructional resources that will be used for instruction,and as supplemental and enrichment should be listed. If the materials are published materials, appropriate reference style should be used listing author, copyright date, title, city of origin, and publisher. (Example: Hunter, Madeline (1982). Mastery Teaching. El Segundo, CA: Tip Publications.)
J.	Course Outline	The course outline should list the course title, major unit concepts in sequence, possible resources and teaching techniques, methods of evaluation, and an estimate of the approximate time to cover the concept. (See Appendix for lists of examples of resources and teaching techniques, and evaluation techniques).
K.	Teacher Expectations	This form lists the course title, the Board mission or goal statement that the course addresses, and the teacher expectations that a student will have to meet to pass the course. In essence, this is a listing of "what will be on the test"; what the student will need to know and understand and what the student will need to do. Examples might be as follows:

Understanding

1. Know the major causes of the Civil War.
2. Understand all grammatical and punctuation rules.

Application

1. Read three books from approved list and write three book reports using class discussed format.
2. Conduct a survey, write a report of results and an analysis of data.

This document will be published and available to parents and students to clarify expectations.

YALE PUBLIC SCHOOLS
COURSE DESCRIPTION

A. Course Title: _____ B. Recommended Grade Level: _____

C. Course Department: _____ Course No: _____

D. Course Length: _____ High School Credit: _____

E. Prerequisites: _____

_____

_____

F. Next Recommended Course in Sequence: _____

_____

G. Brief Description:

H. Primary Goals:

I. Instructional Materials

Instructional

Supplemental

Enrichment

K. Teacher Expectations for Student Outcomes

Name of course _____

Board of Education Mission Statement or Goal this course addresses: _____

_____

_____

In order to pass this course the student will:

1. Demonstrate understanding of:

2. Apply knowledge by doing the following:

YALE PUBLIC SCHOOLS
J. COURSE OUTLINE

COURSE NAME _____ GRADE _____ PAGE ____ OF ____

APPROX TIME	MAJOR UNIT TOPICS IN SEQUENCE	POSSIBLE RESOURCES AND TEACHING TECHNIQUES	METHODS OF EVALUATION

Approval of Course Descriptions

Course descriptions may be reviewed and/or revised on an annual basis. Should a department or teacher wish to revise a course description or introduce a new course, the course description, teacher expectations, and unit plans should first be submitted to the building principal for evaluation of accreditation standards, resources, and scheduling demands. Once reviewed by the building principal, the course description and student objectives should be submitted to the Curriculum Committee. Should the Curriculum Committee approve the course, it will then be submitted to the Board of Education. (Policy #IC).

Unit Plan

Unit plans will specify what the student is expected to do. They will show the relationship of teaching and learning activities to intended learning outcomes. When completed, these may replace lesson plans. They may also be useful in establishing the pretest or anticipatory set for teachers and students. In addition, departments, teachers, and administrators will be able to use this document to audit whether the curriculum has been taught, whether time estimates are accurate, and whether there is need for revision. This document should specify expectations, techniques, and resources which will be helpful for substitutes.

Subject or Class, Unit, Grade	List identifying information
Dates	Leave this column blank. This column will be filled in each school year by the individual teacher as they implement the curriculum.
Content	List in sequential order the content or unit topics from the course outline.
Student Activities	List only essential student activities that will be evaluated to determine understanding or application. Use action or "behavioral" verbs in describing student activities. A list of action or behavioral verbs is contained in the Appendix.
Process	From the Scope and Sequence model list the numbers relating to content and process skills to be developed.

UNIT PLAN

Subject or Class _____ Unit _____ Grade _____

Dates	Content	Student Activities That Will be Evaluated	Process	Teaching Methods and Resources
		The student will:		

Teaching Methods and Resources	List Instructional Materials, activities, or specific techniques to be employed to encourage learning. Examples: Read text pp. 56-80, Lecture, Classroom demonstration, lab experiment, library - find articles from Reader's Guide to Periodical Literature.

Curriculum Review Process

Since there is a limited amount of financial resources available for curriculum review and the purchase of instructional materials, the Curriculum Committee has adopted a Curriculum Review Cycle so that all major departments and curriculum are reviewed every 5 years.

While each curricular area committee may adopt its own procedures, the following is an outline of procedures that would cover the major areas of concern: curriculum review and revision, purchase of instructional materials, and evaluation.

MAJOR CURRICULUM REVIEW PROCESS

Timeline	Committee Process	Outcome
-1 year to focus year	1. Committee is chosen from administrative recommendations and faculty volunteers. Chairpersons chosen.	Membership list
	2. Committee meets to establish goals and needed resources	Committee goals Resource request
	3. Committee does needs analysis of current curriculum	Needs analysis
	4. Committee establishes goals and begins search of relevant research and authoritative literature	Goals
	5. Committee plans inservice for the following year	Inservice Plans
Summer before focus year	6. Publishers are contacted to notify them of upcoming focus year and requests for sample materials.	Letter to publishers

Focus year	7. Committee determines tasks to be performed to meet goals and may form and delegate tasks to subcommittee. Committee determines communication process to members, faculty, administration and Curriculum Committee.	Possible subcommittee lists
	8. Committee implements inservice plan	Schedule of inservice
	9. Committee completes such tasks as curriculum revision and textbook selection.	
No later than May of Focus Year	10. Committee prepares final draft of recommendations to be presented to Curriculum Committee.	Report
No later than June of Focus Year	11. Curriculum Committee reviews, revises, and/or recommends acceptance of report and recommendations.	Minutes of Curriculum Committee
June of Focus Year.	12. Director of Academic Services makes report to Administrative Council and Board of Education for their review and approval	Report
No later than June 30	13. Director of Academic Services, building principals, and Chairperson meet with publisher to finalize recommended learning material purchases based upon enrollment projections. Requisitions submitted to Central Office.	Requisition
+1 - 3 years	14. Director of Academic Services in coordination with Chairperson implement evaluation plan.	Reports to Curriculum Committee and Board of Education
+1 - 3 years	15. Director of Academic Services in coordination with chairperson conducts correlation study with adopted standardized evaluation measures and makes recommendations for revision.	Reports to Curriculum Committee and Board of Education

Curriculum Analysis

Written, or articulated, curriculum will allow teachers, students, the Board of Education, parents, and administrators to analyze curriculum based on the following activities:

Alignment	Does the written curriculum match the taught and tested curriculum?
Mapping	Are all objectives being taught and what are the time allocations devoted to various objectives?
Level	Are various levels of cognition, affect, or psychomotor behavior being stimulated?
Teaching Techniques	Are various styles of learning taken into account in chosing teaching techniques?

Subject Area Committees

Each year, in accordance with the curriculum review cycles, a discipline, or subject area, will come into focus. By that it is meant that this subject area will receive time, effort, and funding for review, revisions, inservice, and/or materials purchase. This will help to control, coordinate, and articulate the subject curriculum K-12, and equitably and efficiently distribute limited funds and staff effort.

Composition

These committees will consist of all interested faculty and administration. These individuals will commit themselves to the time and effort needed to complete the committee's task. Membership will be encouraged to be representative of all buildings and grade levels. It is the responsibility of the members to inform their colleagues.

Goals

The following will be a list of goals for each committee. This list of goals should not be considered inclusive.

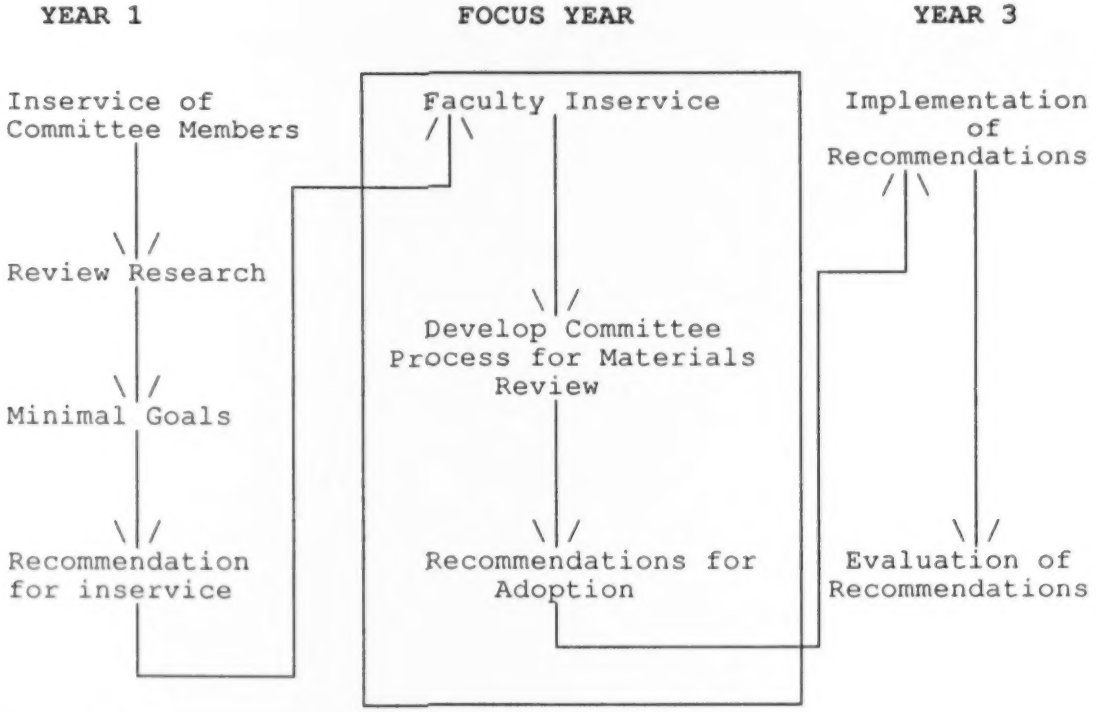
1. Develop and implement inservice plan.
2. Review research
3. Review and develop minimal, or essential, goals for K-12 curriculum in the subject area.
4. Develop committee process.
5. Develop and implement screening process.

6. Make recommendations to Curriculum Committee and Board of Education for essential goals in the subject area and materials for adoption (ie textbooks, support materials etc.).
7. Evaluate implementation of recommendations.

Process

Each committee may determine its own committee process to achieve their goals. However, since the job of curriculum review is a large one, it is recommended that this process be a three-year process as shown graphically in Figure 2.

FIGURE 2
THREE-YEAR COMMITTEE PROCESS



Director of Academic Services

The Director of Academic Services will serve as an ex-officio member of each committee. The director's role will be to facilitate committee procedures and coordinate district resources. The following are some examples of resources available to each committee.

Resources

1. Funds for materials, workshops, substitutes, memberships and subscriptions.
2. Clerical help.
3. Director of Academic Services and Curriculum Committee.
4. Administrative support.
5. Minimal objectives K-6, course descriptions 8-12.
6. Michigan Department of Education essential objectives, consultants, and workshops.
7. Professional publications.
8. ERIC search capabilities.
9. Materials and consultants from major publishers.

R E S O U R C E S

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Guskey, Thomas R. (1986). Synthesis of research on the effects of mastery learning in elementary and secondary classrooms. Educational Leadership, 43, 73-80.

Mitchell, Douglas E. and Spady, William G. (1978). Organizational contexts for implementing outcomes based education. Educational Researcher, 7, 21-29.

Robinson, Glen E. (1986, February). Learning expectancy: A force changing education. ERS Concerns in Education, 1-35.

Rubin, Stephen E. and Spady, William G. (1984, May). Achieving excellence through outcome - based instructional delivery. Educational Leadership, 37-44.

Spady, William G. (1987, Winter). Beyond effectiveness to excellence. California School Boards, 49-52.

APPENDIX

Resources and Teaching Techniques

List the resource or teaching techniques that will be used to achieve the objective. Consideration should be given to various teaching techniques and learning styles. The four major styles or modes of learning are: auditory, visual, tactile, and kinesthetic. The following is a list of teaching techniques that may be helpful:

1. lecture
2. model making
3. role play
4. audio taping
5. question and answer
6. television/video taping
7. independent study
8. contracting
9. programmed learning
10. learning packets
11. on-the-job instruction
12. grouping
13. differentiating materials & methods
14. prescriptive teaching
15. team teaching
16. computer assisted instruction
17. field trip
18. dramatization
19. peer tutoring
20. multiple texts
21. project making
22. demonstration
23. drill
24. games
25. simulation
26. board work
27. learning centers
28. resource speakers
29. discussion
30. individually guided instruction.
31. recitation
32. flash cards techniques
33. debate
34. term paper/research paper
35. book reports
36. drawings
37. spelling tests
38. outlining
39. note taking
40. diagramming
41. mastery learning
42. student speeches.

Evaluation

List the evaluation procedures that will be used to determine whether the student has mastered the objective. The following is a list of evaluative procedures that may be helpful:

1. standardized tests
2. teacher observation
3. peer rating
4. criterion referenced tests
5. commercial tests
6. teacher made tests
7. milestone evaluations
8. essay tests
9. written tests
10. oral tests
11. performance tests
12. team appraisal
13. self evaluation
14. pre and post testing
15. project completion
16. stimulation
17. conferences
18. student established standards
19. formative testing
20. summative testing
21. check lists of skills
22. role play
23. interviewing
24. diagnostic testing
25. product rating
26. skill demonstrations
27. recognition tests
28. true-false tests
29. completion tests
30. multiple choice tests
31. matching tests
32. computational tests
33. spelling tests
34. textbook tests
35. anecdotal records
36. student profiles
37. interviews
38. speeches
39. homework
40. participation in class work.

TAXONOMY OF EDUCATIONAL OBJECTIVES
from Bloom, Krathwohl, et al (1956, 1964, 1972)

Cognitive Objectives

1. Knowing, which has to do with learning and recalling facts, words, and other symbols, classifications, events, trends, principles, ways of working, and theories.

2. Comprehending, which involves interpreting content, translating, it to another form, and extrapolating elements from one situation to another.

3. Applying, or using in new situations what one has already learned.

4. Analyzing, which consists of breaking wholes into parts and noting the nature of the parts and their relationships with each other.

5. Synthesizing, or putting parts together and showing creativity in combining elements.

6. Evaluating, or using criteria to judge the worth of an object.

Affective Objectives

1. Receiving, or showing interest in, giving attention to, and indicating awareness of an object.

2. Responding, which includes both giving willing response and replying with a feeling of satisfaction.

3. Valuing, or accepting a value, preferring it, and becoming committed to it.

4. Organizing values by conceptualizing them, clarifying them, and systematizing them in one's thinking.

5. Characterizing values by internalizing them so that eventually they become a philosophy of life.

Psychomotor Objectives

1. Moving physically, including walking, jumping, running, pulling, pushing, and manipulating.

2. Showing perceptual ability of visual, auditory, tactile, kinesthetic and coordinative kinds.

3. Showing physical ability related to strength, endurance, agility, dexterity, and time required to react or respond.

4. Making skilled, coordinated movements in games, sports, and the arts.

5. Communicating nonverbally through facial movements, gestures, posture, and creative expression.

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from Doll, R. (1986). Curriculum Improvement: Decision Making and Process. Boston, MA: Allyn and Bacon, Inc.

Additional List of Process Skills

1. Outlining
2. Notetaking
3. Observation
4. Categorization and development of taxonomies
5. Induction
6. Deduction
7. Formulating hypotheses
8. Scientific method
9. Development of models
10. Quantitative research techniques
11. Qualitative research techniques
12. Use of databases or sources of information (library skills)
13. Problem solving skills
14. Identifying markets
15. Content analysis
16. Analysis of cost effectiveness
17. Finding similarities and differences
18. Inferences
19. Recognition of assumptions
20. Interpretation
21. Evaluation of arguments
22. Content analysis
23. Metacognition
24. Study skills
25. Conceptualization
26. Mental Arithmetic
27. Estimation
28. Computation

ACTIVATE
ADJUST
ALIGN
ANALYZE
APPLY
ARRANGE
ASSESS
ASSIST
ASSOCIATE
BALANCE
BREAKDOWN
CALCULATE
CATEGORIZE
CHANGE
CHOOSE
CITE
CLASSIFY
CLOSE
COMBINE
COMPARE
COMPLETE
COMPUTE
CONSTRUCT
CONTRAST
CONVERT
COPY
COUNT
CREATE
CRITIQUE
CUT
DEFINE
DESCRIBE
DEMONSTRATE
DESIGN
DETECT
DETERMINE
DEVELOP
DIAGRAM
DIFFERENTIATE
(DIS)ASSEMBLE
(DIS)CONNECT
DISPLAY
DISTINGUISH
DRAW
DUPLICATE
ENUMERATE
ESTIMATE
EXAMINE
EXPLAIN
FILL
FORM
FORMULATE
GRASP
GROUP
HOLD
HONE
IDENTIFY
ILLUSTRATE
INDICATE
INSERT
INTERPRET
LABEL
LETTER
LIFT
LIST
LISTEN
LOAD
LOCATE
LOOSEN
MAKE
MANAGE
MANIPULATE
MEASURE
MODIFY
MOVE
NAME
OPEN
OPERATE
ORDER(ARRANGE)
ORGANIZE
OUTLINE
PERFORM
PLACE
PLAN
POINT
PREDICT
PREPARE
PRESCRIBE
PRODUCE
PRESS
PULL
PUSH
QUOTE
READ
RECALL
RECITE
RECORD
REITERATE
REMOVE
REPAIR
REPEAT
REPLACE
REPLY
REPRODUCE
RESPOND
(RE)STATE
ROTATE
SAY
SELECT
SEPARATE
SEQUENCE
SERVE
SET
SHOW
SIGNAL
SLIDE
SOLVE
SPEAK
SPECITY
STATE
STENCIL
SUBDIVIDE
SYNTHESIZE
TABULATE
TELL
TEST
TIGHTEN
TOUCH
TRACE
TRANSCRIBE
TRANSFER
TROUBLESHOOT
TUNE
TURN
TYPE
USE
UTILIZE
VALIDATE
VERIFY
WRITE
ZOOM

EXAMPLE ACTION VERBS